CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously presented) A process for producing a substrate suitable for subsequent use in semi-conductor processing, said process comprising:

roughening a surface of the substrate material, wherein the roughening produces microfissures therein;

treating the roughened surface with a strong acid; and

applying a dielectric coating composition selected from aluminum oxide, zirconium oxide, yttrium oxide and combinations thereof onto the roughened surface, wherein applying a coating composition onto the roughened surface includes filling and covering the microfissures.

2. (Original) The process of claim 1 wherein the substrate is comprised of a material selected from the group consisting of quartz, ceramics, metals and metal oxides.

3. (Canceled)

4. (Previously presented) The process of claim 1 wherein the coating composition comprises zirconium oxide and yttrium oxide.

5. (Previously presented) The process of claim 1 wherein the step of applying a coating composition onto the roughened surface comprises producing a plasma spray by providing a plasma generating gas and the coating composition to a plasma gun, and directing the plasma spray toward said roughened surface in a manner sufficient to apply the coating composition to the roughened surface.

6. (Original) The process of claim 5 further comprising generating the plasma in the presence of compressed air.

7. (Original) The process of claim 5 comprising generating the plasma at a temperature of from about 10,000 to 30,000 ^{o} F.

8. (Original) The process of claim 5 wherein the plasma generating gas is selected from the group consisting of hydrogen, nitrogen, argon, helium and mixtures thereof.

9. (Original) The process of claim 1 wherein the step of roughening the surface of the substrate material comprises:

a) contacting the substrate material with solid particles of a roughening material to produce a surface roughness in the range of from about 180 to 320 micro inch Ra.

10. (Original) The process of claim 9 wherein the surface roughness is 200-300 micro inch Ra.

11. (Previously presented) The process of claim 1 wherein the step of treating the roughened surface with a strong acid comprises immersing the substrate in an immersion bath comprising the strong acid.

12. (Original) The process of claim 11 wherein the concentration of the strong acid is from 15 to 50 volume percent.

13. (Original) The process of claim 11 wherein the concentration of the strong acid is from 25 to 35 volume percent.

14. (Previously presented) The process of claim 11 wherein the strong acid comprises nitric acid and hydrofluoric acid.

15. (Previously presented) The process of claim 1, wherein the coating composition is yttrium oxide.

16. (Original) The process of claim 1 wherein the depth of the microfissures is up to about 0.005 inch.

17. (Original) The process of claim 1 wherein the depth of the microfissures is up to about 0.006 inch.

18. (Previously presented) The process of claim 1 wherein the thickness of the applied coating is up to about 0.010 inch.

19. (Previously presented) The process of claim 18 wherein the thickness of the applied coating is up to about 0.006 inch.

20. (Previously presented) The process of claim 1 wherein the step of applying a coating composition onto the roughened surface comprises applying the coating composition in the form of a plasma spray.

21. (Previously presented) The process of claim 20 comprising applying the coating composition in the form of a plasma spray at a temperature of from 10,000° F to 30,000 ° F.

22. (Canceled)

23. (Previously presented) The process of claim 1,

wherein roughening the surface of the substrate material comprises leaving microparticles of the substrate material on the roughened surface, and

wherein treating the roughened surface with a strong acid comprises removing at least some of the microparticles of the substrate material from the roughened surface.